

Sustainability Statement

Incorporating Energy Assessment & BREEAM Review

House of Fraser, The Oracle, Reading

Prepared for The Oracle Shopping Centre Limited
November 2019



envision



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CONTENTS

EXECUTIVE SUMMARY	1
1 INTRODUCTION	3
Location and Existing Situation	4
The Proposed Development	4
2 SUSTAINABILITY POLICY CONTEXT	6
National Policy.....	6
Reading Borough Council	6
Hammerson's Net Positive Ambition.....	8
3 BREEAM REVIEW	10
Scoping	10
Pre Assessment Summary	11
Expected Alignment with BREEAM Scoring and Justification	12
4 SUSTAINABILITY STATEMENT	14
Structure.....	14
Management	14
Health and Wellbeing	15
Energy	16
Transport	18
Water Use.....	18
Materials.....	19
Waste	19
Land Use and Ecology	20
Pollution	20
5 CONCLUSION	22

APPENDIX 1 – BREEAM PRE ASSESSMENT

APPENDIX 2 – ENERGY ASSESSMENT

APPENDIX 3 – HAMMERSON'S SUSTAINABLE DESIGN BRIEF

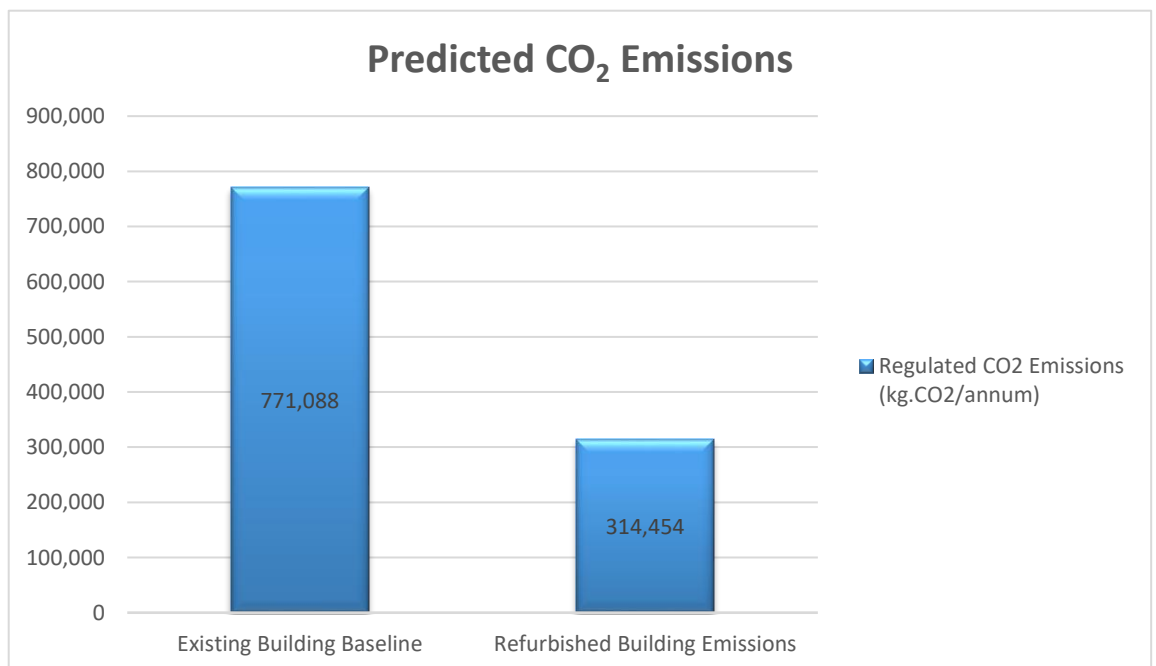
EXECUTIVE SUMMARY

1. This Sustainability Statement, incorporating a BREEAM Pre assessment and Energy Assessment has been prepared by Envision on behalf of The Oracle Shopping Centre Limited (The Applicant) and is submitted to support a planning application seeking full consent for the Subdivision of three-storey retail unit (Class A1) and change of use to form: 1 x flexible retail/restaurant/bar unit (Class A1/A3/A4); 1 x flexible retail/restaurant unit (Class A1/A3) and 1 x assembly and leisure unit (Class D2) at Riverside level; 1 x retail unit (Class A1) and 1 x assembly and leisure unit (Class D2) at lower ground level; 1 x retail unit (Class A1) at upper ground level, together with alterations to the Riverside frontage and associated plant, car parking and external alterations at car park levels. The statement demonstrates how the development will follow relevant best practice sustainable design and construction techniques recognised by Reading Borough Council.
2. The council is taking an active step towards sustainability and declared a Climate Emergency earlier this year with an ambition to be a zero carbon borough by 2030. Hammerson, joint owner of the Oracle Centre also has a 2030 target to be net positive in the areas of carbon, water, resource use and socio-economic impacts across its portfolio of buildings. This includes both landlord and tenant's operational impacts as well as those from development activities including store fit outs.
3. Policy CC2 relates to BREEAM standards for new development. It requires that all major non-residential developments or conversions to residential are required to meet the most up-to-date BREEAM 'Excellent' standards, where possible. Hammerson is familiar with the BREEAM method and where possible and appropriate, applies the BREEAM new construction methodology to new buildings. The proposed development is being taken forward by Hammerson as a speculative refurbishment, and whilst early discussions are being held, no tenants are currently agreed. The scope of Hammerson's work involves relatively minor alterations to the external envelope, and internal modifications, such as new partition walling. The tenants will be responsible for the installation of new services, and all fit out items.
4. As set out by this Statement, whilst BREEAM is required by policy CC2 for a development of this scale, the application for BREEAM it is not a technically appropriate standard to apply to the shell refurbishment works. This is due to the modest changes to the external envelope meaning that the proposals do not meet the thresholds set out by BRE for a shell only (Part 1) BREEAM assessment.
5. Whilst formal certification is not proposed, the scheme will be brought forward to incorporate a range of sustainable design and construction measures aligned with BREEAM. The combination of measures align with a BREEAM Good rating overall, however efforts will be taken to ensure that the energy and water standards align with a BREEAM Excellent rating, which will be secured through Hammerson's Retail Delivery Process with tenants coming into the building. The expected scoring against BREEAM is shown below.

Predicted BREEAM rating based on a shell only part 1 assessment



6. An energy assessment has been undertaken to inform the sustainability strategy. The approach follows the recognised method published by BRE for the assessment of a building undergoing change of use and sub division. An SBEM energy assessment of the existing and proposed development in line with the BREEAM method is presented in Appendix 2, demonstrating how energy efficiency will be promoted through the incorporation of new thermally efficient elements where specified, and the incorporation of new modern and efficient equipment by the tenants.

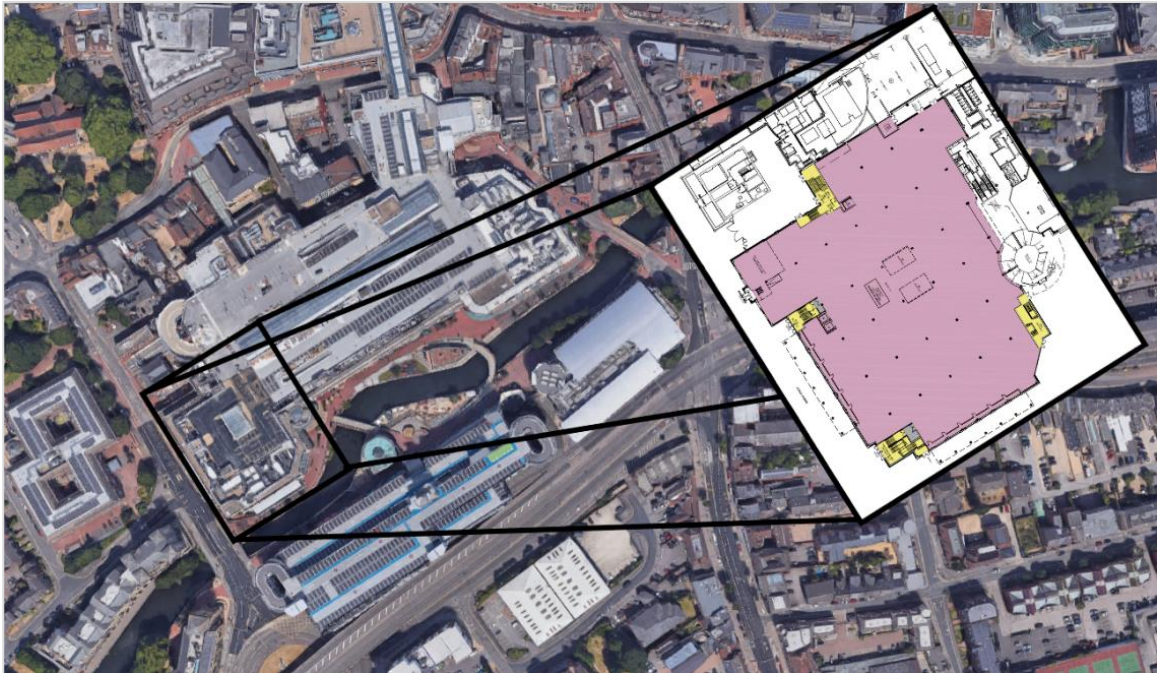


1 INTRODUCTION

- 1.1 Envision has been appointed by The Oracle Shopping Centre Limited (The Applicant) to prepare a Sustainability Statement, incorporating a BREEAM Pre assessment and Energy Assessment to support a planning application seeking full consent for the Subdivision of three-storey retail unit (Class A1) and change of use to form: 1 x flexible retail/restaurant/bar unit (Class A1/A3/A4); 1 x flexible retail/restaurant unit (Class A1/A3) and 1 x assembly and leisure unit (Class D2) at Riverside level; 1 x retail unit (Class A1) and 1 x assembly and leisure unit (Class D2) at lower ground level; 1 x retail unit (Class A1) at upper ground level, together with alterations to the Riverside frontage and associated plant, car parking and external alterations at car park levels.
- 1.2 This statement is structured as follows:
- Section 2 provides a description of the main policies relevant to the development's sustainability standards;
 - Section 3 provides a scoping review against BREEAM Non-Domestic Refurbishment 2014 standards;
 - Section 4 includes the sustainability statement, explaining what measures are possible and practical in alignment with BREEAM and Hammerson's own policies and practices;
 - A summary conclusion is provided in Section 5;
 - The BREEAM pre-assessment is provided as an Appendix 1.
 - An Energy Assessment, demonstrating alignment with BREEAM Excellent is provided in Appendix 2.
 - Hammerson's sustainable design brief is provided in Appendix 3.

Location and Existing Situation

Figure 1.1 Site Location



- 1.3 The Oracle Centre is located within the heart of Reading Town Centre. The existing House of Fraser store occupies the western ‘bookend’ of the Oracle Centre. The building abuts the River Kennet to the south of the site, Bridge street to the west. Behind the building to the north of the site is the Holy Brook Car Park, which is operated by the Oracle Centre. The Eastern flank of the existing unit is within the Oracle Centre shopping centre.

The Proposed Development

- 1.4 The development proposes the sub-division of the existing House of Fraser store, and the change of use of parts of the building to enable alternative uses, including leisure and assembly (D2). In order to facilitate this change of use, relatively modest alterations are necessary to the external envelope and façade. The subdivision will lead to six new units being created across the 3 floors, consisting of retail and leisure spaces and a foodhall on the ground floor.
- 1.5 With regards to the physical works, the proposals will replace external curtain walling on the river frontage, and works are also proposed to infill the escalator core and roof. Amendments to the external envelop will constitute just 17% of the entire envelope. New internal walling will be created, alongside escape stairs and lift cores.
- 1.6 As with all units within the Oracle Centre, Hammerson will only undertake refurbishment works of the shell. Each tenant that leases space within the building will be responsible for installing their own M&E equipment, washroom fittings and services. Full details on the works proposed can be found within the Design and Access Statement.

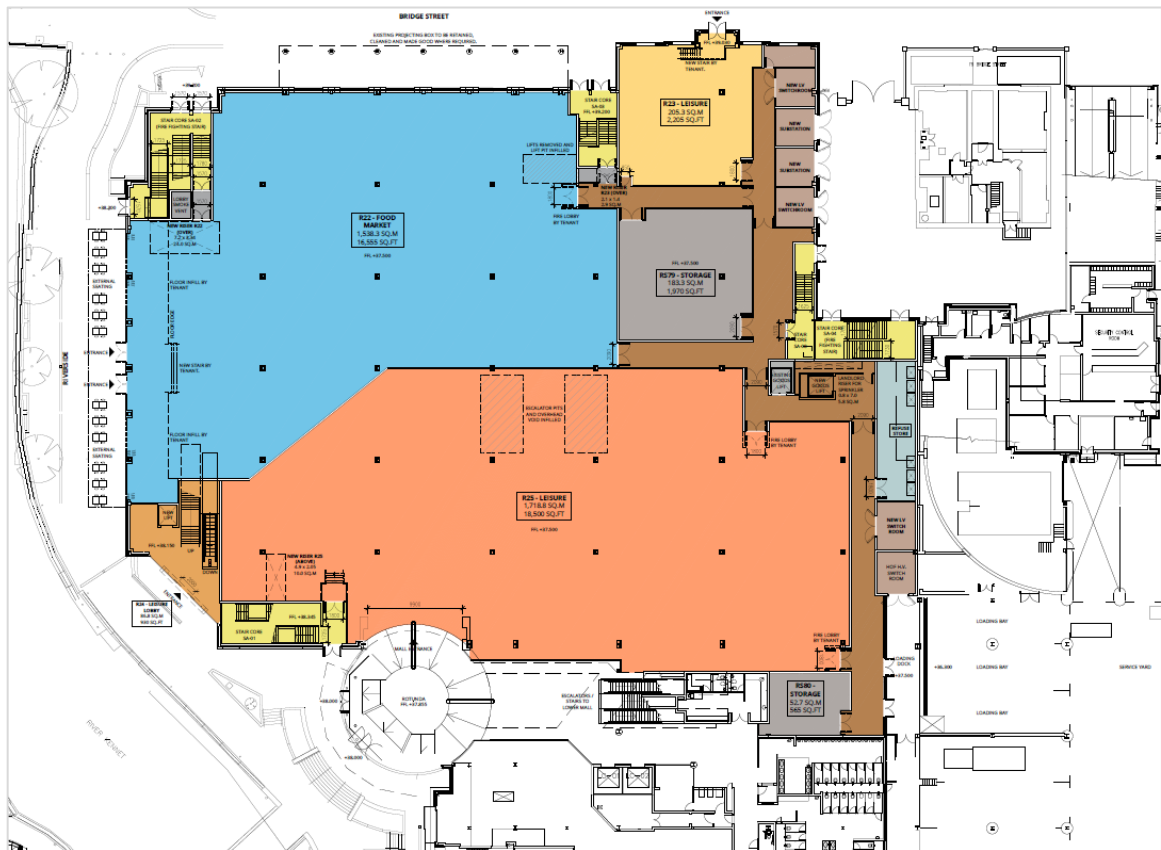


Figure 1.2 Proposed ground floor arrangements

2 SUSTAINABILITY POLICY CONTEXT

National Policy

- 2.1 The revised National Planning Policy Framework (NPPF) was published on 24th July 2018. It sets out the framework for all planning policy in England and how these are expected to be applied. The NPPF sets out a presumption in favour of sustainable development, and the need to support economic growth through the planning system.
- 2.2 Achieving sustainable development means that the planning system has three overarching objectives, which are interdependent and need to be pursued in mutually supportive ways (so that opportunities can be taken to secure net gains across each of the different objectives:
- an economic objective – to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure;
 - a social objective – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering a well-designed and safe built environment, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being; and
 - an environmental objective – to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.
- 2.3 Planning plays a key role in helping shape places to radical reductions in greenhouse gas emissions, minimising vulnerability and providing resilience to the impacts of climate change, and supporting the delivery of renewable and low carbon energy and associated infrastructure. This is central to the economic, social and environmental dimensions of sustainable development. The NPPF does not include detailed measures on sustainable design codes and standards to apply, although expects that when setting any local requirement for a building's sustainability, local planning authorities should do so in a way consistent with the national technical standards.

Reading Borough Council

- 2.4 Reading Borough Council (RBC) has recently its Local Plan, which sets out how Reading will be delivered up to 2036. Key policies in relation to sustainable design are considered below.

Policy CC2: Sustainable Construction and Design

- 2.5 This policy states that proposals for new development, including the refurbishment of existing building stock, will be acceptable where the design of buildings and site layouts use energy, water,

minerals, materials and other natural resources appropriately, efficiently and with care and take account of the effects of climate change.

2.6 As part of this:

- All major non-residential developments or conversions to residential are required to meet the most up-to-date BREEAM 'Excellent' standards, where possible;
- All non-residential development or conversions to residential should incorporate water conservation measures so that predicted per capita consumption does not exceed the appropriate levels set out in the applicable BREEAM standard. Both residential and non-residential development should include recycling greywater and rainwater harvesting where systems are energy and cost effective.

Policy CC3: Adaptation to Climate Change

2.7 This policy requires proposals for new development to incorporate measures to adapt to climate change including;

- Proposals involving both new and existing buildings shall demonstrate how they have been designed to maximise resistance and resilience to climate change for example by including measures such as solar shading, heating and ventilation of the building and appropriately coloured materials in areas exposed to direct sunlight, green and brown roofs, etc.
- Use of trees and other planting, where appropriate as part of a landscape scheme, to provide shading of amenity areas, buildings and streets and to help to connect habitat, designed with native plants that are carefully selected, managed and adaptable to meet the predicted changed climatic conditions; and
- All development shall minimise the impact of surface water runoff from the development in the design of the drainage system, and where possible incorporate mitigation and resilience measures for any increases in river flooding levels as a result of climate change.

2.8 Whilst not policy wording, the supporting text to the policy identifies that applications for change of use of existing buildings should also incorporate measures to adapt to climate change through for example, being flood repairable. All types of flooding (fluvial, surface water and groundwater) must be considered.

Policy CC4: Decentralised Energy

2.9 Policy CC4 encourages decentralised energy. It requires:

- In meeting the sustainability requirements of this plan, developments of the sizes set out below shall demonstrate how consideration has been given to securing energy for the development from a decentralised energy source, including CHP.

- Any development of more than 20 dwellings and/ or non-residential development of over 1,000 sq.m shall consider the inclusion of a CHP plant, or other form of decentralised energy provision, within the site, unless it can be demonstrated that the scheme is not suitable, feasible or viable for this form of energy provision.
- Where there is existing decentralised energy provision, including a CHP plant or a district energy network present within the vicinity of an application site, further developments of over 10 dwellings or non-residential development of 1,000 sq. m will be expected to link into the existing decentralised energy network or demonstrate why this is not feasible.

Emerging SPD on Sustainable Design and Construction (2019)

- 2.10 RBC is currently consulting on a new SPD on Sustainable Design and Construction. The SPD intended to guide developers and decision-makers on the implementation of key sustainability policies set out in the new Reading Local Plan.
- 2.11 The SPD brings together relevant national guidance. It provides practical advice on forms of sustainable design and construction, as well as waste minimisation that will meet these policy requirements. It also details how policies will be applied. This should assist applicants in ensuring that the relevant information is submitted at the appropriate stage of the application and development process.
- 2.12 This SPD therefore explains planning requirements with regard to energy, climate change, water management and waste reduction. Once adopted, the SPD will be a material consideration in the determination of planning applications and will replace the previous Sustainable Design and Construction Supplementary Planning Document adopted on 11th July 2011.
- 2.13 Whilst this SPD is not yet adopted, the principles of the SPD have been followed where appropriate. This statement is structured against the key themes of that document.

Hammerson's Net Positive Ambition

- 2.14 Hammerson's sustainability vision is to create retail destinations that deliver net positive impacts economically, socially and environmentally. This is achieved through leading edge design, operational efficiency and a culture of respect and responsibility.
- 2.15 Hammerson has the objective to become net positive for carbon, resource use, water and socio-economic impacts by 2030. This is therefore consistent with RBC's own aspirations. Hammerson's objectives are as follows:
- Carbon: Net Positive for Carbon means emissions avoided exceed emissions generated.
 - Resource Use: Net Positive for Resource Use means waste avoided, recycled or re-used exceeds materials used that are neither recycled, renewable or sent to landfill.
 - Water: Net Positive for Water means water replenished by external projects exceeds water consumed from mains supply.

- Socio-Economic Impacts: Net Positive for Socio-economic impacts means making a measurable positive impact on socio-economic issues relevant to our local communities beyond a measured baseline.

3 BREEAM REVIEW

- 3.1 Policy CC2 relates to BREEAM standards for new development. It requires that all major non-residential developments or conversions to residential are required to meet the most up to date BREEAM 'Excellent' standards, where possible.
- 3.2 BREEAM assessments provide a sustainability rating of a non-domestic building by giving consideration to a range of criteria. This includes principles of Management, Health & Well Being, Energy, Transport, Water, Materials, Waste, Land Use & Ecology and Pollution. Innovation credits are also available, representing new or exemplary performance in a specific sustainability issue.
- 3.3 The most appropriate BREEAM standards for a refurbishment of an existing non-domestic building are the BREEAM UK Non-domestic Refurbishment and Fit Out criteria (2014). This provides a modular assessment of a building undergoing refurbishment, depending on the scope of works proposed.

Scoping

- 3.4 There are four parts to a BREEAM non-domestic refurbishment assessment as shown in the table below. The relevance to the applicant's proposals are considered against each.

Section	Comment	Relevance to the Planning Application
Part 1 – Fabric & Structure	This part applies where major alterations to the building façade, roof or windows are being undertaken and where the area to be renovated is greater than 50% of the surface of the individual element or 25% of the total building envelope.	The change of use and refurbishment substantially reuses the building envelope, the riverside glazed façade will be removed and updated, and minor amendments to the roof area proposed. All other elements will be retained, including the entire bridge street elevation. Despite the local fabric upgrades, the scheme does not meet the thresholds of Part 1 against BREEAM. Approximately 17% of the external wall / curtain walling elevation will change and 3% of the roof area. Part 1 is not applicable.
Part 2 – Core Services	BREEAM considers 'core services' as services that supply multiple areas and will generally be centralised plant. Part 2 is relevant for the assessment of fully fitted buildings, where at least two M&E systems are to be installed or upgraded.	Core services will be a responsibility of the future tenants, and therefore do not fall within the scope of the works undertaken by Hammerson. Subsequently these cannot be included in a BREEAM assessment. The existing House of Fraser M&E equipment was installed in 1990. The installed equipment by future tenants are expected to be highly efficient, however such systems cannot be taken into account in a BREEAM assessment due to a multi let building. Part 2 is not applicable.

Part 3 – Local Services	Part 3 applies to fully fitted assessments, where at least two fixed building services are to be installed or upgraded within the assessed building.	As above, local services will be the responsibility of the future tenants and cannot form part of the assessment. Part 3 is not applicable.
Part 4 – Interiors Design	Part 4 applies where the refurbishment or fit-out works involve changes to the decoration of the refurbishment or fit-out area. This is only applicable to fully fitted buildings.	Interior design will be the responsibility of the future tenants and cannot form part of the BREEAM assessment for the shell works. Part 4 is not applicable.

- 3.5 As can be seen in the table above, from a technical standpoint none of the 4 parts of the BREEAM non-domestic refurbishment scheme are technically applicable to the work Hammerson is undertaking to facilitate the change of use and subdivision of the building. Whilst the scope of the applicant's works to facilitate the new development involves some alterations and the replacement of riverside glazing and internal modifications, overall the majority of the building envelope and building elements will be retained and made good. All replacement works would exceed current building regulations for thermal efficiency and air tightness. With the exception of new lifts and escalators, there will be no centralised landlord equipment within the building and all buildings services and interior fit out will be the responsibility of future tenants who will install efficient equipment expected to far exceed the efficiency of the existing HoF unit. This will be secured through Hammerson's retail delivery process.
- 3.6 It is therefore concluded that a non-domestic BREEAM assessment is not appropriate, although elements of the BREEAM scheme can be considered for the development and would be secured as part of a sustainable design brief for the works. Hammerson's Sustainability Brief is provided in Appendix 3.
- 3.7 A BREEAM Pre assessment has been undertaken to consider how the development proposals that are proposed would likely score against BREEAM. Given that many aspects are not relevant in this case, a BREEAM Excellent target would not be met. This is provided in Appendix 1.

Pre Assessment Summary

Scoring Level

- 3.8 The BREEAM rating system is based on a point scoring system. In order to achieve progressively higher ratings, more points (or 'credits') need to be achieved. These are not all equally weighted, with some categories holding more value in the assessment than others. In terms of ratings, an Excellent rating is 70% or more.

Table 3.1 BREEAM Rating Levels

Level	% Score
Outstanding	≥ 85
Excellent	≥ 70
Very Good	≥ 55
Good	≥ 45
Pass	≥ 30
Unclassified	< 30

Mandatory Credit Requirements

- 3.9 The majority of credits within BREEAM are tradable, meaning that there is some flexibility to how a specific target can be achieved. However, BREEAM also includes a number of mandatory standards which must be met in order to achieve specific ratings. These credits are shown in the table below.

Table 3.2 Minimum Credit Criteria – Part 1 Assessment

BREEAM issue	Very Good	Excellent
Man 03 – Responsible Construction Practices	-	On credit – Considerate Construction
Man 04 – Commissioning and Handover	-	One credit (Building User Guide)
Ene 01 – Reduction of CO2	-	Six credits
Mat 03 – Responsible Sourcing	Criterion 1 only (Timber)	Criterion 1 only (Timber)
Wst 03 – Operational Waste Storage	-	One Credit

Expected Alignment with BREEAM Scoring and Justification

- 3.10 Policy CC2 expects major developments (over 1000 m² of refurbishment) to reach BREEAM Excellent. Whilst from a technical standpoint BREEAM should not be applied, a formal BREEAM Pre Assessment has been undertaken which demonstrates how the scheme will align with a BREEAM measures, where appropriate.
- 3.11 The pre assessment is provided in Appendix 1. This demonstrates that the works associated with the shell would be expected to lead to a Good rating. Whilst this is below the policy expectations of RBC, it indicates that the applicability of BREEAM in this case is generally limited when using the current refurbishment methodology.
- 3.12 A similar case and approach has previously been agreed for the refurbishment of the Broad Street Shopping Mall (47 Oxford Road Reading, ref 181774), where it was identified that the BREEAM

non domestic refurbishment was not a particularly appropriate method to apply, and that a Part 1 assessment only, including details to a BREEAM 'Pass' Rating should be provided to formally discharge the planning condition for sustainability. The conclusion followed analysis regarding the constraints of formal BREEAM certification of speculative units involving change of use and subdivision. Some of the key constraints identified with that application are also relevant here, including:

- The scale and nature of the works are very limited and generally do not align with BREEAM, which is better suited to new build development or for the refurbishment of a building owned and fitted out by the same party.
- It is important to reflect that the high street retail market is heavily stretched, with increased pressure from online markets and out of town sites. The additional investment costs to achieve BREEAM certification on the development would not be recoverable as it is not practical to impose higher rents in the building.

- 3.13 Furthermore, more recent applications for the Broad Street shopping Mall (190099/FUL) involving amalgamation of 2 units and change of use did not include planning conditions for BREEAM.
- 3.14 It is therefore not appropriate to require formal BREEAM certification, but rather demonstrate to RBC by way of planning condition, that the measures commensurate to a BREEAM Good, as set out in Appendix 3 will be achieved. This should be by way of a formal review of the building and through submission of a report, with supplementary photographic evidence, where appropriate, that the measures have been installed.

4 SUSTAINABILITY STATEMENT

Structure

4.1 This section is structured to address the following sustainable design themes, which have been identified from a review of the draft Sustainable Design and Construction SPD. It is noted that these themes are consistent with the structure of the BREEAM methodology.

- Management
- Health and Wellbeing
- Energy
- Transport
- Water
- Materials
- Waste
- Land Use and Ecology
- Pollution

Management

4.2 BREEAM encourages good practice both in construction site management and for the operation of the building. Hammerson and its partners own and manage the Oracle Centre and implement a series of procedures as standard practice when managing new construction and refurbishment projects. These limit the impacts of construction projects on the Oracle's customers and existing tenants within and around the shopping centre.

Construction Management

4.3 In terms of construction management, the following would be undertaken:

- The Principal contractor would register the project with the Considerate Constructors Scheme and achieve a score 35 or more;
- Energy use would be monitored during construction using the BREEAM reporting tool, based on kWh consumption per 100K of project value;
- Water use would be monitored and recorded during construction;
- 100% of the timber would be sourced in accordance with Government Timber Policy;
- The contractor will operate an Environmental Management System (EMS);
- A 'sustainability champion' will oversee the setting of targets for the project. This is expected to be a member of Hammerson's sustainability team;
- New building fabric will be commissioned prior to handover of the unit to the tenants.

Operational Management

- 4.4 In terms of facilities management and the tenant's obligations, the Oracle Retailer's Handbook (2005) requires that fit out designers and contractors include energy and water efficient measures as part of their installations.

Health and Wellbeing

- 4.5 BREEAM Non domestic refurbishment includes various credits which assist to make buildings accessible and promote health. It includes standards for natural daylight, the control of glare, lighting levels and occupant controls.

Daylight and lighting

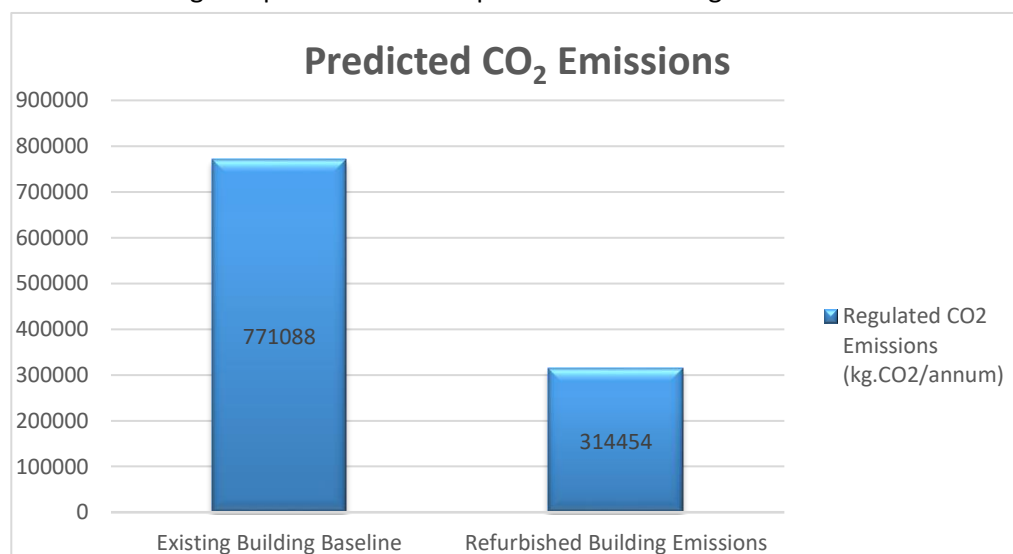
- 4.6 It is relevant to note that in many cases the ability to achieve daylight credits and view out is limited by virtue of the existing building. Good levels of natural daylight are available to certain parts of the building subject to subdivision, however BREEAM requires that 35% of the building floor area achieves a 2% daylight factor, with a good level of uniformity of daylight to avoid darker areas. This is not possible, and indeed not appropriate for certain operators expected within the building. Level 2 for example is expected to be leased to a bowl operator, where natural light is not desired.
- 4.7 New internal lighting will be required as part of the works. The internal lighting for the building will be designed by the tenant. This will be subject to the requirements of the retail handbook.

Safety and Security

- 4.8 BREEAM requires that specific consultation is undertaken with an Architectural Liaison Officer or similar. Security is always an important consideration for Hammerson. The Oracle Centre benefits from 24-hour security and a CCTV system linked to a manned control room. Hammerson employs Duty Assistants at the site whose role it is to:
- Liaise with the various shops and units with the aim of crime prevention.
 - Dispersing groups of people who appear to be loitering within the Centre and around the building and public realm areas.
 - Escort visitors from the premises that appear to be under the influence of alcohol or drugs, or displaying behaviour not suited to a family environment.
 - Ensure that visitors do not drink or smoke in unallocated areas.
- 4.9 The design of the site is being consulted through the Hammerson operational team that have advised on security issues. Thames Valley police will also be consulted as standard as part of the planning application process as a statutory consultee.

Energy

- 4.10 Under BREEAM non domestic refurbishment, credit Ene 01 requires that improvements are made by considering improvements from the existing building. Where buildings are subject to change of use guidance note GN21 and Knowledge Base Process note KBCN0574 provide clarifications.
- 4.11 As detailed in the Energy Note presented in Appendix 2, in order to accurately demonstrate the improvement in energy performance between the existing and proposed building, whilst still producing outputs that can be assessed in BREEAM, the development has been modelled as follows:
- (1) The existing building has been modelled with A1 use class throughout, and M&E inputs in line with assumed House of Fraser fit out;
 - (2) The proposed sub-division has been modelled, with M&E inputs in line with Hammerson fit-out requirements;
 - (3) The existing building CO₂ emissions and refurbished building CO₂ emissions can then be compared on a like for like basis.
- 4.12 The strategy, which is further explained in Appendix 2 includes:
- Efficient building services, achieved and secured through the tenant retail delivery process;
 - Highly efficient LED lighting mandated throughout;
 - Heat Pumps with adequate controls
 - Heat recovery for supply and extract;
 - Enhanced thermal values for the new glazed areas;
 - Direct electric hot water provision (or gas-fired if tenant required); and
 - Application of Hammerson's metering specification.
- 4.13 The figure below demonstrates that through the application of the energy efficiency measures summarised above and detailed in Appendix 2, a **59.22%** reduction in CO₂ emissions in the refurbished building is expected when compared to the existing House of Fraser store.



Review of Decentralised Energy

- 4.14 Policy CC4 of the emerging Reading Borough Council requires proposals for new development to demonstrate how consideration has been given to securing energy for the development from a decentralised energy source (including various renewable technologies) and CHP.
- 4.15 A desktop study was undertaken to identify whether any heat networks are present in the vicinity of the site, none were identified.
- 4.16 There are a number of issues preventing the installation of an on-site CHP led heat network in a refurbishment, retail-led project such as this, including:
- (1) CHP systems run most effectively (and viably) when a development has a substantial coincidence of demand for hot water and power for the majority of hours in the year, examples of this include hotels, hospitals and university halls of residence. As detailed in Table A.8 in the Energy Appendix, the energy assessment has identified lighting as the highest energy consumer with space and water heating making up less than 24% of total energy requirements;
 - (2) Gas-engine CHP systems have been the most commonly used technology to serve on-site heat networks to date. As the electricity grid decarbonises the carbon savings achieved from gas-engine CHP will decrease, and with growing concerns of the impact of the technology on air quality in built-up urban areas, their use is generally declining;
 - (3) The proposed refurbishment forms part of the wider Oracle Centre, and therefore any provision of a heat network would need to coincide with works to the wider centre, which is not planned at this point.
- 4.17 Therefore, it is deemed a CHP generator would not be suitable for a development of this nature.

Future Connection to District Heating

- 4.18 Opportunities have been considered during design development to provide a connection at boundary. However, the design will not include any connection to boundary to provide linkage to a decentralised energy network. The proposed individual heat pump systems will not be compatible with any future district heating (DH) system.
- 4.19 In the event of a DH network becoming economically viable and accessible in the area, it would necessitate the removal of all of the individual heat pump systems to allow for a DH wet connection at the boundary of each retail/leisure unit.
- 4.20 In this instance, given that no DH networks are available within the vicinity of the site, and given the reasons outlined above, it is suggested that a capped connection at boundary or other similar infrastructure is unnecessary and impractical.

Transport

- 4.21 BREEAM awards credits for accessible developments that make provision for sustainable forms of transport.
- 4.22 Reading Train Station is located approximately 0.6 miles from the proposed development. The station offers connections throughout the UK, to London, Oxford the South West and the north of England. Its highly accessible location assists with the performance under BREEAM. Reading also benefits from an excellent bus network including Park and Ride schemes stopping near the Oracle including NightTrack - Reading's late-night bus service. Bus services provide access the Oracle Centre 24 hours a day, 7 days a week. Many of which are powered by biofuels. Four of five credits are available for BREEAM credit Tra 1.
- 4.23 Credits are also available if a compliant Travel Plan and cycle storage. Hammerson maintains a Green Travel to Work Plan. The document aims to outline how The Oracle encourages the use of sustainable travel options for Centre Management staff, but also for the retailers. Whilst the Travel Plan primarily focuses on Oracle Centre staff, the Plan is shared with retailers on the site with a view to make a modal shift away from private car use. The continued application of the Travel Plan warrants credits under BREEAM.
- 4.24 Suitable cycle storage already exists at various points around the Oracle Centre and would be made available to the staff of the centre. The existing features are sufficient to award credits under BREEAM, as over 50 units are provided across the estate.
- 4.25 The proposals also incorporate 2 no electric vehicle charging points into the scheme.

Water Use

- 4.26 Under BREEAM Non domestic refurbishment, credits are not awarded for reductions in water use for a part 1 assessment. A shell only BREEAM assessment excludes the consideration of water efficiency measures, however such requirements will be secured through future leases and the Retail Delivery process. Hammerson will ensure that the tenants install efficient plumbing within each unit, including low water fittings compliant with BREEAM. A 40% reduction in water usage would be achieved through the following specification:
- Dual flush WCs: 6l flush maximum
 - Low flow taps: 4.5l/m or below
 - Showers: 6l/m or below
 - Urinals: 1.5l/bowl/hr or below
 - Leak detection
 - Water shut-off device
- 4.27 Hammerson will install a leak detection system for the unit on the buildings main water main. This will provide leak detection capability at the buildings boundary, and within the floor slab of the unit.

Materials

- 4.28 The materials section within BREEAM non domestic refurbishment awards credits for the reuse of materials and the specification of sustainable 'major' building elements which are highly rated under the 'Green Guide to Specification'.
- 4.29 The proposed development can be brought forward with only modest alterations to the buildings envelope. The riverside façade will be replaced with new curtain walling and parts of the roof will be infilled, where the existing escalator is located. As stated, the level of work proposed to the envelope is not significant enough to warrant the use of a formal BREEAM Part 1 assessment. Notwithstanding this, Hammerson's sustainability design brief sets out requirements on the build and Hammerson's retail delivery process will secure best practices with regard to material specification within the fit out.
- Building Specification – New curtain walling will achieve the highest rating possible. It is generally practical for aluminium framed curtain walling system to achieve a Green Guide D rating.
 - Responsible sourcing of materials in the base build– standards are being set for 100% FSC / PEFC timber and procuring materials with ISO14001 / BES 6001 accreditations.
- 4.30 In addition, Hammerson will require tenants to comply with the minimum good practices (where possible), which will be checked through the retail delivery process.
- FSC or PEFC certification (timber);
 - Low VOC (paints and varnishes);
 - BES6001 Good or above for relevant blockwork / stud walling;
 - EU Ecolabel;
 - Reused materials; and
 - High recycled content as per WRAP 'good practice' standards.

Waste

- 4.31 This category of BREEAM considers the construction and operational waste through future maintenance and repairs associated with the building structure and interiors. Issues in this section aim to optimise material reuse, reduce the waste arising from the refurbishment and fit-out as well as through operation of the building, encouraging its diversion from landfill.
- 4.32 It is material to note that the reuse of the majority of the building supports waste objective and circular economy principles. Refurbishment waste streams are expected to be fairly limited, as the majority of roof and façade will be directly reused.

- 4.33 Hammerson will be responsible for the strip out of materials, fixtures and finishing associated with the House of Fraser store. A pre refurbishment audit will be undertaken to ascertain opportunities for strip out and reuse of materials, where practical and possible.
- 4.34 Targets will be established within a Resource Management Plan. At this stage it is expected that the following be worked towards:
- A target for waste generation 1.9 tonnes of construction waste per 100 m² of floor area of the project.
 - The Contractor should divert a minimum of 97% of construction waste and 99% of demolition waste from landfill.
 - All centre waste management protocols are to be followed, and data should be provided monthly on tonnes of waste sent to incineration / reuse / recycling / landfill.
- 4.35 In operation, tenant waste will be managed in accordance with existing practices maintained within the Oracle Centre.

Land Use and Ecology

- 4.36 BREEAM awards credits for locating development on brownfield sites in areas of low ecological value. Credits are also available through consultation with an ecologist and the incorporation of landscaping and ecological enhancements into a scheme.
- 4.37 A Part 1 assessment can include consideration of ecology, dependent on the scope of the building and refurbishment. There are currently no ecological features on the building or that will be affected by the works.

Pollution

- 4.38 BREEAM awards credits for design measures which reduce pollution from the building. The section covers a number of areas including impacts from refrigerants on level of greenhouse gas emissions, NOx emissions to reduce pollution of the local environment, SuDS, light pollution and noise. Due to the nature of the proposals, many of these issues have not been raised by the local authority during pre-application consultation.

Light Pollution and Noise

- 4.39 Given the built up nature of the surrounding area and night time uses, the new refurbishment is not expected to add significant night time light or noise pollution to the local area. There will only be limited new areas of glazing where light can spill from.
- 4.40 Any new lighting installed will be carefully designed so as to not affect night time amenity. The design will follow the ILE guidance on the Reduction of Obtrusive Light.

Drainage and Flood Risk

- 4.41 Flood Risk and SUDs are also addressed in BREEAM. The site lies within Flood Zone 1 'Low Probability', defined as land at less than 1 in 1000 annual probability of river flooding. An assessment has been made concerning future flood risk within a Flood Risk Assessment submitted with the planning application. The site does not flood during the 'design standard' 1 in 100 annual probability +25% climate change flood event. Furthermore, the proposed development will not increase the impermeable area of the site, and a modern surface water drainage system is already in place - therefore, there are no proposed changes to the existing surface water drainage regime.

5 CONCLUSION

- 5.1 This Sustainability Statement, incorporating a BREEAM Pre assessment and Energy Assessment has been prepared by Envision on behalf of The Oracle Shopping Centre Limited (The Applicant) and is submitted to support a planning application seeking full consent for the subdivision and change of use of the House of Fraser, Oracle Centre. The statement demonstrates how the development will follow relevant best practice sustainable design and construction techniques recognised by Reading Borough Council.
- 5.2 Policy CC2 relates to BREEAM standards for new development. It requires that all major non-residential developments or conversions to residential are required to meet the most up-to-date BREEAM 'Excellent' standards, where possible. As set out by this Statement, BREEAM is not a technically appropriate standard to apply to the shell refurbishment works. This is due to the modest changes to the external envelope meaning that the proposals do not meet the thresholds set out by BRE for a shell only (Part 1) BREEAM assessment.
- 5.3 Whilst formal certification is not proposed, the scheme will be brought forward to incorporate a range of sustainable design and construction measures aligned with the BREEAM standard, this includes meeting the mandatory energy performance of BREEAM Excellent.
- 5.4 Any such planning conditions around sustainability should reflect the constraints demonstrated by this statement for applying formal BREEAM certification. If a planning condition is to be imposed by RBC, it is recommended that the following wording is applied.

“Prior to the completion of the refurbishment works, the measures in Hammerson’s Sustainable Design Brief for the project (Appendix 3 of the Sustainability Statement) should be demonstrated to have been achieved. This should be by way of a formal review of the building and through submission of a report, with supplementary photographic evidence, where appropriate, that demonstrates that the measures have been installed”.

APPENDIX 1 –BREEAM PRE ASSESSMENT

Credit Title	Available Credits	Targeted Credits	Unachievable Credits	BREEAM Requirements	Project Specific Comments
Management					
Man 01 – Stakeholder Consultation	1	1		A clear sustainability brief developed prior to concept design. Identify and define roles, responsibilities and contribution of project team for key phases of the project delivery.	Hammerson has developed a sustainability brief for the project, which has been agreed with the project team. This is in line with Hammerson's Net Zero ambition.
Man 01 – Stakeholder Consultation (Third Party)	1		1	Design team to consult 3 rd party stakeholders prior to completion of detailed design – feedback to all relevant parties given and received.	The requirement to undertake formal public consultation is of limited value for the change of use application. Hammerson has internally consulted and is liaising with agents on local requirements.
Man 01 – Sustainability Champion	1	1		Appointment of sustainability champion to the project.	Envision is a BREEAM AP organisation. In addition Hammerson's own sustainability team have been steering the brief.
Man 01 – Sustainability (Champion Monitoring Progress)	1	1		Sustainability Champion to monitor and report progress against agreed BREEAM performance targets.	Envision is a BREEAM AP organisation and can oversee commitments through further design.
Man 02 – Elemental Life Cycle Cost	2		2	An outline, entire asset elemental life cycle cost plan has to be carried out at RIBA stage 2 in line with 'Standardised method of life cycle costing for construction procurement.	As the scope of shell works is very limited, the benefit of undertaking this on the minimal shell works is reduced.
Man 02 - Component Level Life cycle Cost	1		1	A component level LCC plan has been developed by the end of Process Stage 4.	As the scope of shell works is very limited, the benefit of undertaking this on the minimal shell works is reduced. In addition, most components relevant to the assessment are associated with the fit out, outside of Hammerson's control.

Man 02.2 – Capital Cost Reporting	1	1			Report the capital cost for the fit-out works in pounds per meter square (£/m ²) via the BREEAM Assessment Scoring and Reporting tool.	Capital cost reporting assumed feasible to achieve, however is not proposed as formal certification with BRE is not to be pursued.
Man 03 – (Prerequisite) Legally Harvest and Traded Timber	-	Y			All timber and timber-based products used on the project is 'Legally harvested and traded timber	This is standard for all Hammerson's projects and included in the sustainability brief, appendix 3.
Man 03 – Environmental Management	1	1			Principal contractor operates ISO 14001 EMS.	This is standard for all Hammerson's projects and included in the sustainability brief, appendix 3
Man 03 – Construction Stage Sustainability Champion	1	1			A Sustainability Champion is appointed to monitor the project to ensure ongoing compliance with the relevant sustainability performance/process criteria, and therefore BREEAM target, during the Construction, Handover and Close Out stages.	This is standard for all Hammerson's projects and included in the sustainability brief, appendix 3
Man 03 – Considerate Contractors Scheme	2	2			Principal contractor achieves score >35 under the Considerate Contractors Scheme (CCS)	This is standard for all Hammerson's projects and included in the sustainability brief, appendix 3
Man 03 – Monitoring of Refurbishment or Fit-Out Site Impacts (Energy and Water)	1	1			Construction contractor monitor energy and water consumption on site.	To be included in Principal Contractor requirements.

Man 03 – Monitoring of Refurbishment or Fit-Out Site Impacts (Transport of Construction Materials and Waste)	1	1		Contractor to monitor fuel consumption of transport of materials and waste to/from site.	To be included in Principal Contractor requirements.
Man 04 – Commissioning Building Fabric	1	1		Commission building fabric, including a thermographic survey.	Assumed feasible, however there may be constraints for heating the space at the shell stage. To be kept under review.
Man 04 - Handover	1	1		A Building User Guide will be developed prior to handover for distribution to the building occupiers and a committed schedule of training for building occupiers.	Ensure a BUG will be available to incoming tenants based on the shell.
Health and Wellbeing					
Hea 01 – Control of glare from sunlight	1		1	Glare control strategy designs out potential glare in relevant building areas where risk identified. The glare control strategy must avoid increasing lighting energy consumption. Glare control measures for meeting the glare control criteria include: Occupant controlled devices such as blinds. External shading.	South and west facing glazing can be fitted with glare control by future occupiers, however the credit is largely outside of the control of Hammerson.
Hea 01 – Daylighting	3		3	Up to three credits are available depending on the percentage of relevant building areas that comply with the following: The relevant building areas meet good practice daylight factor OR the relevant building areas meet good practice average and minimum point daylight illuminance criteria.	Credit not expected to be achievable based on the existing building footprint and depth. In addition a number of uses proposed, such as potential bowling offer, is not expected to require natural light. .

				1 credit – 17.5% of sales area achieves point daylight factor of 2% or more and all other occupied areas achieve average daylight factor of 2% or more 2 credits – 25% of sales area achieves above 3 credits – 35% of sales achieves above	
Hea 01 – View out	2		2	For relevant building areas, 95% of floor area within 8m of external wall with window, and window size >20% of surrounding wall area.	Not all areas are able to benefit.
Hea 01 – Internal and external lighting levels, zoning and control	1	1		All fluorescent and compact fluorescent lights fitted with high frequency ballasts. Internal lighting designed to provide lux levels in accordance with SLL Code for Lighting, CIBSE Lighting Guide 7 and other relevant industry standards; and zoned to allow occupant control. Separate zoning required in retail space for display and counter areas (PIR controls must include manual override). External lighting designed in accordance with BS5489 and BS EN 12464-2:2-14.	Any lighting proposed by Hammerson would comply.
Hea 02 – Indoor air quality (IAQ) plan	1	1		Site specific (IAQ) plan produced and implemented, the plan must be produced and implemented. The objective is to minimise indoor air quality during the design, construction and occupation of the building.	IAQ plan assumed achievable, must be produced at earliest opportunity before construction. Requires an IAQP to be produced.
Hea 02 – Ventilation	1		1	Designed to minimise the indoor concentration and recirculation of pollutant in the building. Provide fresh air into the building in accordance with the criteria of the relevant standard for ventilation.	Intakes and exhausts likely to be too close to achieve credit. Assumed not feasible.

Hea 02 – Volatile Organic Compounds (Products)	1	1			All decorative paints and varnishes specified must meet BREEAM criteria. In addition, at least 5 of the 7 remaining product categories meet testing requirements and emissions levels criteria for Volatile Organic Compound (VOC) Emissions.	Paints and varnishes, and other products used on project to be checked against BREEAM criteria, assumed feasible.
Hea 02 – Volatile Organic Compounds (Post Construction)	1			1	The formaldehyde concentration level is measured post construction and is to be found less or equal to 100ug/m ³ averaged over 30 mins.	Post Construction VOC emission testing requirements for BREEAM 2014 very stringent and costly. Credits not assumed.
Hea 02 – (Exemplary Credit) Volatile Organic Compounds	1			1	All product types listed meet the emission limits and testing requirements.	Emission requirements for BREEAM 2014 very stringent. Credits not assumed.
Hea 02 – Potential for Natural Ventilation	1			1	The building ventilation strategy is designed to be flexible and adaptable to potential building occupant needs and climatic scenarios	Assumed limited scope of natural ventilation - credit not targeted. The deep floorplates would require mechanical ventilation.
Hea 04 – Thermal modelling	1			1	Thermal modelling in accordance with CIBSE AM11 Inc. full dynamic thermal analysis, winter temp ranges in accordance with CIBSE Guide A, and building designed to limit risk of overheating.	Thermal comfort not practical or beneficial for a building already in use and subject to limited external alterations. Tenants would be expected to size HVAC correctly to ensure comfortable temperatures.
Hea 04 – Thermal Modelling – Future Climate	1			1	Above thermal comfort analysis informs temperature control strategy, and strategy provides compliant zoning and controls	As above1
Hea 05 – Acoustic performance	2			1	Meet relevant acoustic performance standards for sound insulation, indoor ambient noise levels and reverberation.	Hoare lea advising on acoustics. All areas will be designed to meet good practice levels however testing is currently not proposed.

Hea 06 – Security of site and building	1		1	Security Needs Assessment (SNA) undertaken during RIBA Stage 2 and design embodies recommendations.	A formal third-party security needs assessment is not expected to be beneficial for the development, however the proposals have been informed through Hammerson's own security reviews and security team at the Oracle and statutory consultation with the police. The proposals are therefore considered to align with the requirements in general.
Energy					
Ene 01 – Whole Building Energy Model	15	6		A calculation of the energy score using the BREEAM Refurbishment and Fit-out energy model must be carried out. Local Services should be assessed as these are relevant to the scope of work: energy performance of local heating, cooling, ventilation, lighting and controls as relevant to inform the results. This must be assessed against a baseline BRUKL.	The energy assessment demonstrates that 6 credits are possible, equivalent to a BREEAM Excellent rating for energy criteria. This is a key aspect of alignment with Policy CC2.
Ene 04 – Passive Design Analysis	1		1	First, the first credit within issue Hea 04 Thermal comfort has been achieved. Then analysis of the existing building fabric, form, site location and outline scheme design is carried out to identify potential passive design solutions and retrofit measures that reduce demands for energy consuming building services. The building uses passive design measures to reduce the total heating, cooling, mechanical ventilation and lighting loads and energy consumption in line with the findings of the passive design analysis.	This credit is not targeted for the building. The existing building and limited remodelling to the external façade does not warrant or enable this credit to be achieved.
Ene 04 – Free Cooling	1		1	The passive design analysis carried out under criterion 2 includes an analysis of free cooling and identifies opportunities for the implementation of free cooling solutions.	As above.
Transport					

Tra 01 – Sustainable Transport	5	4		The public transport Accessibility Index (AI) for the assessed building is calculated and BREEAM credits awarded according to the building type. The Accessibility Index is determined by entering the following information into the BREEAM Tra 01 calculator: a. The distance (m) from the main building entrance to each compliant public transport node b. The public transport type(s) serving the compliant node, e.g. bus or rail c. The average number of services stopping per hour at each compliant node during the operating hours of the building for a typical day	The town centre location achieves 4 of 5 credits in BREEAM.
Tra 02 – Proximity to Amenities	1	1		Where the development is within 500 meters of appropriate amenities.	The site is within 500 meters of a cash point and food outlet.
Tra 03 – Cyclise Facilities	2	1		Compliant cycle spaces are included for the first credit and adequate: Showers Changing facilities Lockers Drying spaces.	Existing facilities within the Oracle centre available.
Tra 05 – Travel Plan	1	1		A travel plan has been developed as part of the feasibility and design stages.	A travel plan is already in operation at the Oracle.
Materials					
Mat 01 – Life Cycle Impacts	4	4		Robust environmental performance information has been collected for newly specified materials or where materials are retained in situ.	It is assumed that all new materials used internally can be supported with robust environmental performance data.
Mat 03 – (Prerequisite)	-	Y		Minimum requirement for all timber products to be legally sourced.	To be included in Principal Contractor requirements. This is included in Appendix 3.

Legally harvested and traded timber						
Mat 03 – Enabling sustainable procurement	1	1			Produce a sustainable procurement plan by the design team to guide specification towards sustainable construction products in place before Concept Design. Following the process set out in BS ISO 20400:2017.	To be included in Principal Contractor requirements. This is included in Appendix 3.
Mat 03 – Measuring responsible sourcing	3	2			Achieve 36% of the points available in the Mat 03 calculation.	To be included in Principal Contractor requirements. This is included in Appendix 3.
Mat 05 – Designing for durability and resilience	1	1			The building incorporates suitable durability and protection measures or designed features/solutions to prevent damage to vulnerable parts of the internal elements. This must include, but is not necessarily limited to: a. Protection from the effects of high pedestrian traffic in main entrances, public areas and thoroughfares (corridors, lifts, stairs, doors etc.). Protection against any internal vehicular/trolley movement within 1m of the internal building fabric in storage, delivery, corridor and kitchen areas.	The majority of these requirements are expected to be met as standard by the tenants fit out.
Mat 06 – Material Efficiency	1			1	Opportunities have been identified, and appropriate measures investigated and implemented within the scope of refurbishment or fit-out works, to optimise the use of materials through building design, procurement, refurbishment, maintenance and end of life.	The scope of the materials used is generally very limited. A Materials efficiency study is not expected to add value in this case. Consideration should be given to reusing elements for the building, for example the escalators.

Waste						
Wst 01 – Pre Refurbishment Audit	NA	1			ensure that a pre-refurbishment audit of all existing buildings, hard surfaces within the scope of the refurbishment or fit-out zone is completed. The audit should be carried out at the Concept Design Stage (equivalent to RIBA stage 2) prior to strip-out or demolition works in order to use the audit results to guide the design, consideration of materials that can be reused, and to set targets for waste management and ensure all contractors are engaged in the process of maximising high grade reuse and recycling opportunities.	Undertake a pre refurbishment audit of aspects which will not be removed by HOF. This should be undertaken once access is available.
Wst 01 – Reuse and Direct Recycling	2			2	Where waste material types are either directly re-used on-site or off-site or are sent back to the manufacturer for closed loop recycling.	Hammerson will continue to explore this, however direct reuse opportunities are expected to be limited on site.
Wst 01 – Resource Efficiency	4	2			Prepare a compliant Resource Management Plan (RMP) and a construction waste resource efficiency benchmark of 1.9 tonnes of construction waste generated per 100m ² GIFA.	Relevant requirements to be included in Principal Contractor requirements.
Wst 01 – Diversion from Landfill	1	1			Prepare a compliant Resource Management Plan (RMP) and divert at least 85% by volume or 90% of waste from landfill.	Target should be achievable, which will be secured through Sustainable Brief in Appendix 3.
Wst 03 – Operational waste	1	1			A dedicated central space for storage of recyclable waste, clearly labelled and accessible to building occupants/facilities operators.	Assumed achievable. Potential that central recycling centre for whole development, however space exists back of house and can be labelled accordingly.
Wst 06 – Design for disassembly and functional adaptability	1			1	Carry out and implement a functional adaptation appraisal at concept design.	Not considered relevant for the project.
Pollution						

Pol 03 – Flood Risk Management	2	2		A site-specific FRA is undertaken confirming the development's flood zone.	Low Flood Risk as confirmed by FRA.
Pol 03 – Surface Water Run off	2	1		There is no increase in the impermeable surfaces as a result of the refurbishment works;	There is no increase however it is not possible to provide further attenuation.
Pol 03 - Minimising water course pollution	1		1	There is no discharge from the developed site (includes new and existing hard landscaping and buildings) for rainfall up to 5mm (confirmed by the Appropriate Consultant). Where suitable pollution prevention measures are put in place (or already exist) for the different sources of pollution present on the assessed site, in accordance with compliance note	Storage of the first 5mm is not possible.

APPENDIX 2 – ENERGY ASSESSMENT

A2 ENERGY ASSESSMENT

- 1.1 Policy CC2 of the emerging Reading Borough Council Local Plan requires proposals for new development, including the redevelopment and refurbishment of existing building stock, to be designed to ensure they; “..use energy, water, minerals, materials and other natural resources appropriately, efficiently and with care and take account of the effects of climate change.”

Methodology

- 1.2 Under BREEAM non domestic refurbishment, credit Ene 01 requires that improvements are made by considering improvements from the existing building. Where buildings are subject to change of use guidance note GN21 and Knowledge Base Process note KBCN0574 provide clarifications.
- 1.3 BREEAM guidance requires that the energy model for the existing building in a change of use project should include the physical characteristics of the existing building but with the use class of the proposed refurbished building to enable a comparison to be made between the performances of the two buildings. Whilst this is the case, the BREEAM method does not provide clarification for buildings which are undergoing sub division and change of use (to multiple use classes), as is the case with this development.
- 1.4 To model the physical characteristics (internal layout) of the existing A1 House of Fraser whilst arbitrarily applying A1/D2 use classes to certain zones, as per the proposed refurbishment, would not be a fair comparison, and would not lead to accurate results.
- 1.5 Therefore, in this instance, and in order to accurately demonstrate the improvement in energy performance between the existing and proposed building, whilst still producing outputs that can be assessed in BREEAM, the development has been modelled as follows:
1. The existing building will be modelled with A1 use class throughout, and M&E inputs in line with assumed House of Fraser fit out;
 2. The proposed sub-division will be modelled, with M&E inputs in line with Hammerson fit-out requirements;
 3. The existing building CO₂ emissions and refurbished building CO₂ emissions can then be compared on a like for like basis.
- 1.6 This methodology will allow the applicant to:
1. Demonstrate how the refurbishments will significantly reduce CO₂ emissions when compared to the existing building;
 2. Still allow calculation of ENE 01 credits under BREEAM Non-Domestic refurbishment guidance.
- 1.7 In accordance with NCM guidance, the appropriate methodology for calculating the energy performance of the existing and refurbished building is through a Simplified Building Energy Model (SBEM). The SBEM was produced using DesignBuilder software version 6.1.0.006, which is a DCLG approved software and methodology for undertaking SBEM.

Step 1 – Determine the Energy Demand of Existing Building

- 1.8 The existing building to be refurbished comprises of House of Fraser at Oracle Riverside. For the purposes of this Energy Assessment, the entire of the retail unit was modelled to determine the existing building energy performance.

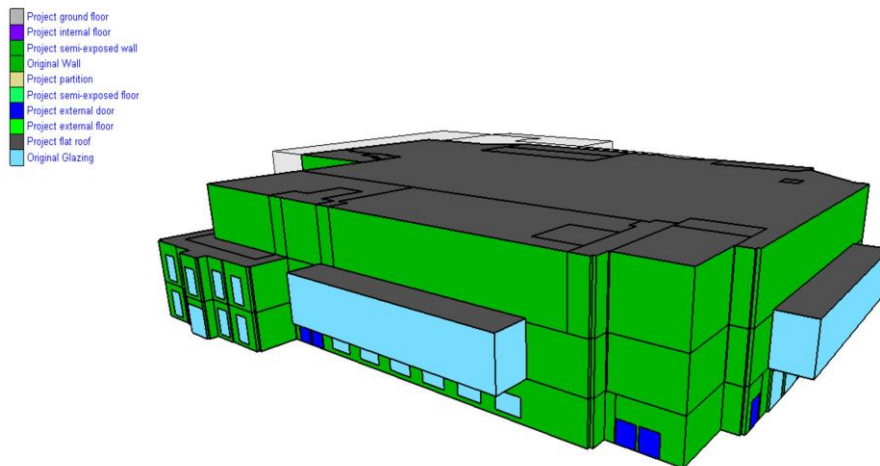


Fig 5.2 – DesignBuilder model of Existing House of Fraser (not aesthetic representation of building)

- 1.9 Scale drawings of the existing property were provided by the scheme architect and were used as the basis for modelling the existing building.

Determining Existing Thermal Values

- 1.10 Without undertaking a full fabric infiltration analysis, determining u-values for existing properties can be challenging. In order to provide an accurate representation of thermal values, the planning history of the building was researched. The existing House of Fraser unit, and wider Oracle Centre have undergone a number of planning applications and design changes since it was first constructed, however desktop research has confirmed that the Oracle Centre was first built in 1999, with House of Fraser occupying the unit that year.
- 1.11 Therefore, inference u-values from 1995 English Building Regulations and entered as follows:

Table A.1 – U-Values of Existing Building

Element	Existing Building U-Values (W/m ² K)	Comment
External Wall	0.45	Built to 1995 Building Regulations ¹
Roof	0.25	
Ground Floor	0.45	
Windows	3.3	
Doors	3.3	

¹ https://www.planningportal.co.uk/info/200135/approved_documents/74/part_1_-_conservation_of_fuel_and_power/7

Determining Existing Air Tightness

- 1.12 Non-domestic EPC conventions for England & Wales (Issue 7.1) states in Section 2.03 that buildings built to 1995 English Building Regulations are to have an Air Permeability Rate of 15 m³/h.m²

Building Services

- 1.13 The building services input data was taken from information provided by the design team alongside data from the EPC for the House of Fraser unit. The EPC was produced in 2010, and the XML data file was sourced from the Non-Domestic Energy Assessor online database, confirming efficiencies for a number of the HVAC systems. Where data was unavailable, default figures from EPC Conventions and the Non-Domestic Building Services Compliance Guide (2010) were entered.

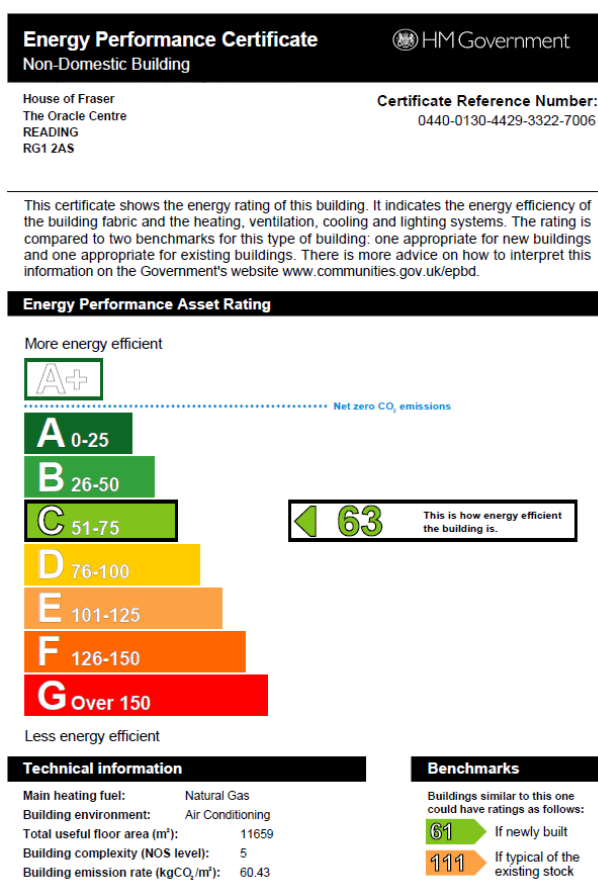


Fig A.2 – Existing Building EPC

- 1.14 The EPC confirmed the ‘main heating fuel’ as natural gas, and the building environment strategy as air conditioned:

Table A.2 – Existing Building Service Inputs

Element	System	Efficiency	Comment
Heating to Retail/Office Areas	Gas-Fired Boiler	83%	System & efficiencies confirmed from existing EPC information.
Cooling to Retail/Office Areas	Heat Pump	EER – 2.5	System & efficiencies confirmed from existing EPC information.
Supply & Extract Ventilation System	Air Handling Unit assumed	Extract & Supply – 2.2 W/(l/s) HR Efficiency – 50%	System confirmed from existing EPC information. Efficiencies are pegged to 2010 compliance guide.
WC Extract-Only System	n/a	Extract SFP – 0.6	Efficiencies are pegged to 2010 compliance guide.
Lighting	n/a	Default LED efficiency assumed	No lighting data available, therefore default SBEM efficiency has been assumed.
Hot Water System	Gas-Fired	83%	System & efficiencies confirmed from existing EPC information.

Existing Building Energy Demand Results

- 1.15 Using the figures and information as determined above, the following summarises the energy demand and CO₂ emissions of the existing House of Fraser unit:

Table A.3 – Existing Building Energy Demand

Energy Consumption by End-Use (kWh/m ²)		
End-Use	Existing Building	Refurbished Building
Heating	7.21	
Cooling	22.69	
Auxiliary	8.61	
Lighting	68.5	
Hot Water	24.14	
Total Energy Demand (kWh/m²)	131.14	
BER (kg.CO₂/m²)	58.6	
Total Area	13,158.5	
Total kg.CO₂.annum	771,088	

- 1.16 The figures above for the existing building of **771,088 kg/CO₂/annum** demonstrates the indicative performance of the House of Fraser before the refurbishment and sub-division of the unit.

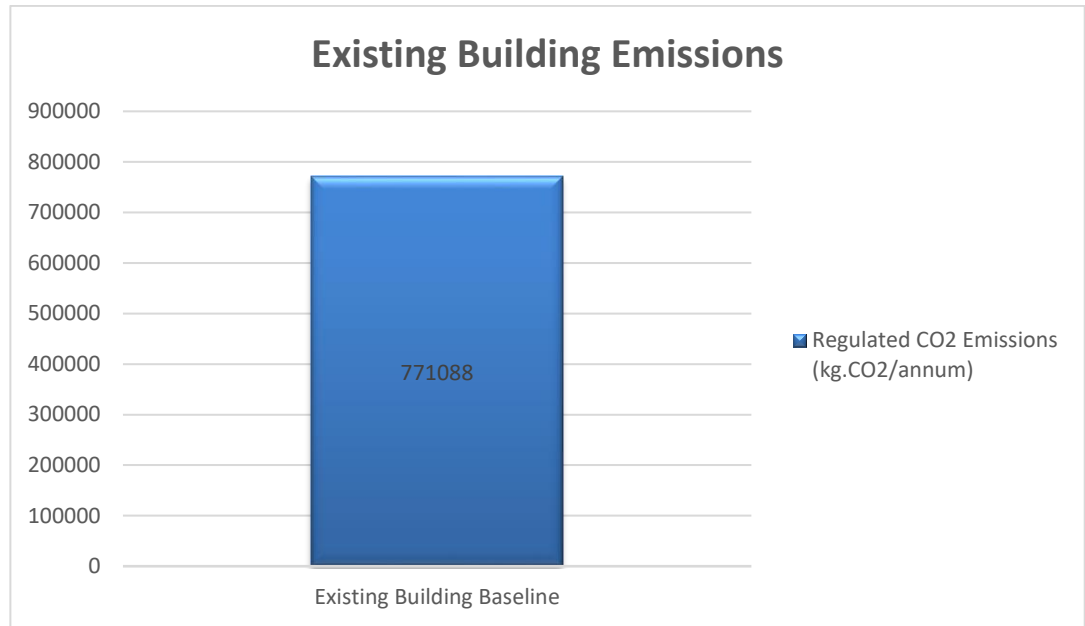


Fig A.3 – Existing Building Emissions

Determine CO₂ emissions for Refurbished Building - Methodology

- 1.17 The development proposes the sub division of the existing House of Fraser store, and the change of use of parts of the building to enable alternative uses, including leisure and assembly (D2). In order to facilitate this change of use, relatively modest alterations are necessary to the external envelope and façade. The subdivision will lead to six new units being created across the 3 floors, consisting of retail and leisure spaces and a food market on the ground floor.
- 1.18 As this is a speculative development, with the incoming tenants proposed fit-out layout and building services unknown, a number of assumptions have been made on the fit-out with the following zones modelled in A1/D2 areas;
1. Indicative office & WC zones in both A1 & D2 use;
 2. Indicative eating and food preparation zones in D2 use.
- 1.19 Hammerson, as a landlord and property developer have developed a 'Standard Sustainability Design Brief for Asset Management Projects', which acts as a guide and standard template to incorporate sustainability and Net Positive into all value-add, refurbishment, reconfiguration or other landlord works at existing centres. The overarching emphasis is for designers and contractors to consider and adopt, at the earliest opportunity in the project, the most sustainable option where possible and to fully justify if not.
- 1.20 Any incoming tenants to Hammerson owned properties must ensure their fit-out complies with the criteria set out in the 'Standard Sustainability Design Brief for Asset Management Projects', which sets minimum efficiencies for building services.
- 1.21 The assumptions on incoming tenants fit-out in this report have had their minimum efficiencies pegged to the Hammerson sustainability requirements

Step 2 – Apply Energy Efficiency Measures

- 1.22 U-Values, are used to measure how effective elements of a building's fabric are as insulators. That is, how effective they are at preventing heat from transmitting between the inside and the outside of a building. The lower the U-value of an element of a building's fabric, the more slowly heat is able to transmit through it, and so the better it performs as an insulator. Very broadly, the better (i.e. lower) the U-value of a buildings fabric, the less energy is required to maintain comfortable conditions inside the building.
- 1.23 All new elements in the refurbished development (which are limited) will meet with the requirements as set out in the table A.4:

Table A.4 – Proposed U-Values

Elements	New Thermal Elements: U-Values – W/m ² K	Part L2b Limiting Fabric Parameters – W/m ² K	Comment
External Wall	0.25	0.35	n/a
Ground Floor	n/a	0.25	No upgrade proposed to ground floor
Roof (Flat & Pitched)	n/a	0.25	No upgrade proposed to roof
External Glazing	1.8	2.2	New windows on Riverside elevation
External Solid Doors	1.8	2.2	n/a

Air Permeability

- 1.24 The designed Air Permeability Rate (APR) has been retained at 15 m³/h.m² @ 50Pa.

Lighting

- 1.25 This energy demand in the new portion of the development will be limited by the application of more efficient lighting, photocell daylight control and use of LED lighting throughout. The following lighting design requirements are therefore stipulated and taken from the Hammerson sustainability design brief:

Table A.5 – Lighting Datasheet

Lighting zone	Luminaire Lumens / Circuit Watt	Light Output Ratio	Photocell Dimming (Parasitic Power – W/m ²)	Occupancy Sensing – On/Off (Parasitic Power – w/m ²)
Retail & Leisure Areas	100	1	No	No
BOH Areas	100	1	No	Yes (0.3 W/m ²)

Ventilation Strategy

- 1.26 The ventilation strategy has been detailed to match the type of typical system specified in A1/D2 uses, whilst improving the energy efficiency needed to lower carbon emissions in line with the Hammerson sustainability design brief. The following strategy is proposed:

Table A.6 – Summary of Ventilation Strategy

Ventilation Zone	System	Specific Fan Power	Heat Recovery (Efficiency)
Retail & Leisure Areas	Air-Handling Unit	1.6	Yes (80%)
WCs	Basic Extract Fan (remote from zone)	0.3	No
Store Rooms, Stairwells and BOH Circulation	Natural Ventilation	n/a	n/a

Heating & Cooling Systems

- 1.27 The following assumptions have been made on the incoming tenant's heating & cooling:

Table A.7 – Summary of Heating & Cooling Strategy

Heating/Cooling System	Area Served	Efficiency	Comment
Heat Pump providing heating & cooling	Customer Areas (A1/D2) & Office Areas	SCOP – 4.5 SEER – 4.5 EER – 4.5	Metered in line with Hammerson requirements
Electric Radiators	WCs	100%	Metered in line with Hammerson requirements

Hot Water

- 1.28 All A1/D2 areas are assumed to be served by an instantaneous electric water heater.

Refurbished Building – Predicted CO₂ Reductions

1.29 The following tables and graphs represent the predicted CO₂ emissions for the refurbished development over the existing building baseline:

Table A.8– Refurbished Building Energy Demand

Energy Consumption by End-Use (kWh/m ²)		
End-Use	Existing Building	Refurbished Building
Heating	7.21	2.93
Cooling	22.69	6.89
Auxiliary	8.61	7.13
Lighting	68.5	21.57
Hot Water	24.14	7.91
Total Energy Demand (kWh/m²)	131.14	46.44
BER (kg.CO₂/m²)	58.6	24.1
Total Area	13,158.5	13,047.9
Total kg.CO₂.annum	771,088	314,454
Improvement (kg.CO ₂ .annum)	456,634	
% Improvement	59.22%	

1.30 The figures above demonstrate that through the application of the energy efficiency measures detailed in this section will result in a **59.22%** reduction in CO₂ emissions in the refurbished building when compared to the existing House of Fraser store.

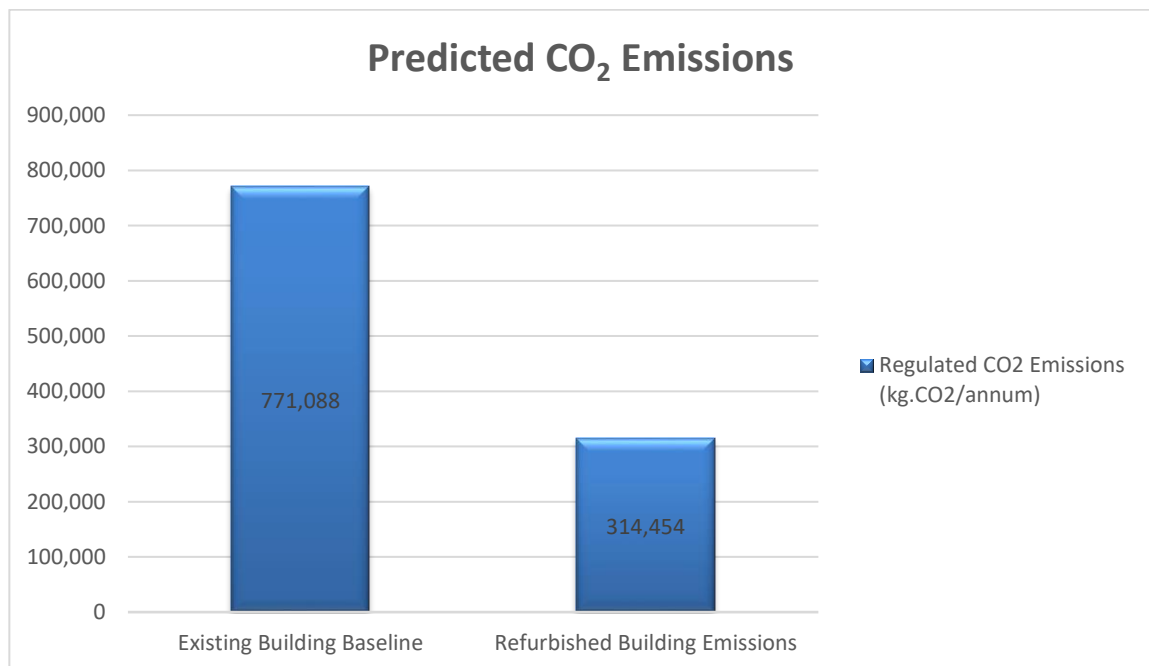


Fig A.4 – Refurbished Building Emissions

APPENDIX 3 – HAMMERSON SUSTAINABLE DESIGN BRIEF

Standard Sustainability Design Brief for Asset Management Projects

This document acts as a guide and standard template to incorporate sustainability and Net Positive into all value-add, refurbishment, reconfiguration or other landlord works at existing centres. The overarching emphasis is for designers and contractors to consider and adopt, at the earliest opportunity in the project, the most sustainable option where possible and to fully justify if not.

This document and supporting evidence forms part of our Environmental Management System and as such is subject to both internal and external audit under ISO14001:2015.

For all projects, the Sustainability Design Brief needs to be completed at the project feasibility/work up stage if there is relevant information available and referenced when a Capital Expenditure Request is made. The brief will not be relevant for some projects (e.g. fire alarm upgrades) so this should be noted in the CER. At concept design stage, the brief needs to be fully completed by a member of the project team (e.g. external PM or designer) or by the Hammerson Asset / Project Manager. The brief should be updated at the detailed design stage if required and/or if other design changes occur. Through Workman, the Sustainability team will track completion of the design brief for relevant projects and review as required.

New build centres and extensions should use the [Sustainability Implementation Plan](#) and engage with [Richard Quartermaine](#). Not all requirements may apply to the specific project, and may be marked as 'N/A' on the document. The requirements are split into the following sections:

- Energy
- Materials
- Water
- Furniture
- External works

This brief should form part of the Sustainability Employer's Requirements for Asset Management projects to be issued to all tendering contractors. The comments column in this document should be completed, returned to the Sustainability Team ([Kate Neale](#) or [Richard Quartermaine](#)) along with the Project Brief, and evidence of compliance must be retained in case of audit.

All Hammerson suppliers are required to complete the [Supplier Survey](#) and score a minimum of 70%. Speak to [Zoe Long](#) about how a supplier can access the survey.

Project requirements – for all refurbishment, reconfiguration and other landlord projects

	Criteria	Standard	BREEAM Credit	SKA Reference	Comments / Evidence
1.0	Energy Efficiency				
1.1	Operational carbon footprint	Calculate the net impact on landlord's annual operational carbon emissions post completion of the works.	-	-	Landlord and tenant annual operational carbon emissions post completion will be lower compared to the pre-development HOF store. Refer to the Energy Statement.
1.2	LED lighting	All lighting to be LED and have a minimum efficacy of 100 lm/W.	-	E02, E04	Included within MEP specification.
1.3	Lighting controls	Full time, PIR and daylight dimming controls should be added wherever lights will not be needed constantly (i.e. in all BOH and car parks).	-	D49, E01	Included within MEP specification.
1.4	Natural ventilation	Avoid the use of mechanical ventilation	-	-	Back of house areas are not mechanically ventilated.
1.5	External lighting	All external lighting to have a minimum efficacy of 70 lm/W and be automatically controlled for prevention of operation during daylight hours and presence	Ene03	-	External feature lighting design to meet or exceed this standard except the LED display lighting tape which had a very low lighting load (<0.9kW).

	Criteria	Standard	BREEAM Credit	SKA Reference	Comments / Evidence
		detection in areas of intermittent pedestrian traffic.			
1.6	Photovoltaic panels	Provide PV to available roof area and/or car parks via carports and set up appropriate O&M contract.	Ene05	-	Not proposed due to limited suitable roof space available.
1.7	Metering	Provide automatic sub-meters to all tenant supplies which are provided from landlord network, WC areas and major energy uses in landlord areas in accordance with Hammerson guidelines. Speak to Kate Neale to ensure you are metering to the latest specification.	Ene02	E08, E09	No tenant supplies will come from the landlord network, so not applicable. IF remote stores are to be used by tenants and fed from landlord then meters will be provided in line with this.
1.8	Air source heat pumps	Minimum efficiencies - Cooling (air conditioned) minimum SEER/SSEER 4.5/3.6 - Cooling (mixed mode) minimum SSEER 2.7 Controls: On/Off zone control, time, room air temperature, outdoor fan operation, defrost control of external airside heat exchanger, external room thermostat to regulate the space temperature and interlocked with the heat pump unit operation.	Ene01	D03, E06	No ASHPs to be provided as part of the shell works. This will be a tenant responsibility as part of their fit out.
1.9	Centralised air conditioning systems	Specific fan power: - Central balanced mechanical ventilation system with heating and cooling 1.6 w/l/s - Central balanced mechanical ventilation system with heating only 1.5 w/l/s	Ene01	D03, E06	No air conditioning to be provided as part of the shell works. This will be a tenant responsibility as part of their fit out.

	Criteria	Standard	BREEAM Credit	SKA Reference	Comments / Evidence
		Limit air leakage from ventilation ductwork- evidence from test results if undertaken Meet minimum control requirements- dependent on the system Heat recovery where feasible for supply/extract systems. minimum dry heat recovery efficiency for heat exchangers 80% Variable speed controls of fans and pumps, controlled via multiple sensors and demand control (mechanical ventilation only). Local extract units 0.3 w/l/s			
1.10	Boilers	90% minimum seasonal efficiency for single or multiple boiler systems Controls: Zone specific time and temperature demand control where floor area is > 150m ² ; weather compensation except where a constant temperature supply is required.	Ene01	E11	No boilers to be provided as part of the shell works. This will be a tenant responsibility as part of their fit out.
1.11	Hot water services	Minimum thermal efficiencies: - Gas fired > 30 kW output - 90% - Gas fired < 30 kW output - 73% If system includes a tank heat loss should not be greater than specified with non- domestic HVAC guide 2013 Controls: Automatic thermostat control, high limit thermostat to shut off primary flow if system temperature is too high, and time control.	Ene01	D05	No hot water services to be provided as part of the shell works. This will be a tenant responsibility as part of their fit out.

	Criteria	Standard	BREEAM Credit	SKA Reference	Comments / Evidence
1.12	Small power equipment, IT, white goods etc	Energy Star rated equipment or with an energy efficiency rating of A+++ should be used.	Ene08	-	MEP specification will incorporate where works required in landlord areas only.
1.13	Electric vehicle charging	Where electric vehicle charging points are installed, chargers should be "fast charging" (7-22kW) and individually metered. A three-phase electricity supply should be provided to serve all charge points including sufficient allowance to accommodate additional charge points in the future. Where electric vehicle charging points are not installed, three phase electricity supply should be provided to enable future installations.	-	-	Two electric vehicle charging points are to be installed alongside the existing charging points located on Level 2 of the Holy Brook Car Park.
1.14	Energy Performance Certificates	All units to be let to tenants must achieve a minimum Energy Performance Certificate D rating. Tenants will also need to comply with the requirements in the Sustainability Checklist for Tenant Fit Outs and Retail Delivery available from Richard Quartermaine or Kate Neale .	-	-	Shell EPCs will achieve a D rating.
2.0	Water use				
2.1	Operational water footprint	Calculate the net impact on landlord's annual operational water consumption post completion of the works.	-	-	M&E Engineer to calculate impact on water use from new landlord supply requirements (i.e. refuse stores, etc.)
2.2	Water efficient fittings	Install highly efficient sanitary appliances as per Hammerson standard WC specification (maximum 3litre cistern flushes, waterless urinals, taps compatible with Waterblades if flow rate is above 2.5litres/minute).	Wat01	-	Not applicable, no sanitary appliances are proposed to be installed as part of the works.

	Criteria	Standard	BREEAM Credit	SKA Reference	Comments / Evidence
2.3	Water metering	Install a pulsed mains water meter and sub-meters to WC and other relevant areas, as per Hammerson's metering strategy. Speak to Kate Neale for latest copy of strategy to ensure compatibility to smart metering network.	Wat02	E17	Included within MEP specification.
2.4	Water leak prevention and detection	Provide shut-off devices to each WC area/facility to reduce water wastage and a detection system capable of detecting a major water leak on the mains water supply.	Wat03	-	Not applicable, no sanitary appliances are proposed to be installed as part of the works.
3.0	Materials				
3.1	Building fabric lifecycle impact	The following elements to be A or A+ rated in accordance with the BRE Green Guide: • External walls • Windows • Floor slabs • Roof • Internal walls	Mat01	M04	Internal walls and floor slab infill specification will achieve an A rating.
3.2	Responsible sourcing of materials	Timber - 100% FSC, PEFC or equivalent	Mat03	-	Contractor to ensure all timber to be specified as being FSC and / or PEFC. Standard to form part of Employer's Requirements / Contract Preliminaries.
		Non-timber – 80% of materials to be BES6001 or ISO 14001/EMAS compliant Environmental Management System OR EMS structure compliant with BS8555:2003	Mat03	-	Contractor to ensure standard is met. Standard to form part of Employer's Requirements / Contract Preliminaries.

	Criteria	Standard	BREEAM Credit	SKA Reference	Comments / Evidence
		Avoid Chinese granite unless evidence of a responsible supply chain can be evidenced (e.g. ETI)	-	-	No proposals to use any form of granite at this stage in the project. Existing materials to be reviewed to identify if granite has been used and needs to be matched. If so, this standard will be met.
3.3	Floor coverings	Specify hard floor coverings which are either: - reused; - manufactured with at least 25% recycled content (hard flooring) or 50% recycled content (soft flooring); - A or A+ rated in BRE's The Green Guide to Specification (http://www.bre.co.uk/login.jsp); - A or A+ rated in BRE's Green Book Live database; 'Cradle to Cradle' Gold or Platinum certified	-	M11, M12	Not Applicable. No floor coverings proposed as part of the works. Retail shell only. No internal fit out.
3.4	Paints, polishes and varnishes	Specify paints, polishes and varnishes: - water based - with an EU Ecolabel; - manufactured with at least 90% recycled content; or - supplied with an environmental product declaration, written in accordance with ISO 14025 standards.	-	M14, M15	Standard will be met.
3.5	Timber, joinery and hardwoods	Reclaimed or sourced timber or 100% sourced with FSC, PEFC or equivalent Chain of Custody certification	-	M05, D20, M06	Contractor to ensure all timber to be specified as being FSC and / or PEFC. Standard to form part of Employer's Requirements / Contract Preliminaries.

	Criteria	Standard	BREEAM Credit	SKA Reference	Comments / Evidence
3.6	Wall coverings	Specify wall coverings which are either: - reused; - manufactured with at least 70% recycled content and - recyclable content, measured by mass (excluding wall tiles); - manufactured with at least 50% recycled content and recyclable content, measured by mass if a new wall tile (ceramic, glass, clay, stone, porcelain); 'Cradle to Cradle' Gold or Platinum certified - supplied with an environmental product declaration, written in accordance with ISO 14025 standards - FSC, PEFC or equivalent Chain of Custody certified if paper-based wallpaper	-	M13, M16	Not applicable. No wall coverings proposed as part of the works. Retail shell only. No internal fit out.
3.7	Doors	Specify doors which are either: - re-used; - manufactured with (or a combination of): - composite materials that have at least 80% recycled content; or	-	M17	Standard will be met.

	Criteria	Standard	BREEAM Credit	SKA Reference	Comments / Evidence
		- o metal components that follow WRAP's Choosing Construction Products guide (see guidance): – steel section 60% – stainless steel 75% – copper sheet 60% – aluminium extrusion 44% – aluminium sheet 73%; or • supplied with an environmental product declaration, written in accordance with ISO 14025 standards; and • FSC, PEFC or equivalent Chain of Custody certified if containing wallpaper.			
3.8	Low VOC emissions	The following products where specified should comply with following British Standards: • Varnishes: BS EN 13300:2001 • Wood panels: EN 13986:2015 • Timber structures: EN 14080:2013 • Wood flooring: EN 14342:2013 • Floor coverings EN 14041:2018 • Suspended ceiling tiles EN 13964:2014 • Flooring adhesives EN 13999-1:2013 • Adhesives for hanging flexible wall coverings BS 3046:1981 • Wall-coverings EN 233:2016, EN 234:1997, EN 259:2001, EN 266:1992	Hea02	D63, D64	Not applicable. None of these elements proposed for the scheme.

	Criteria	Standard	BREEAM Credit	SKA Reference	Comments / Evidence
		All products should all meet the requirement for formaldehyde E1 as tested to standard BS EN 717-1:2004. The Contractor should allow for air quality testing to demonstrate any harmful emissions are within acceptable limits.			
3.9	Signage	All internal signage must meet at least one of the following: • reused; • manufactured with at least 65% recycled content; • manufactured with cardboard or rapidly renewable products; • if adhered graphics, are manufactured from a non-pvc product; or • if timber, 100% to be FSC/PEFC certified	-	M26	Not applicable. No internal signage forming part of the proposed works.
4.0	Furniture				
4.1	All furniture	Specify furniture which is either: • manufactured with at least 80% recycled content and recyclable content, designed for deconstruction with components that can be recycled, measured by mass;	-	M20, M22	Not applicable. Retail shell only. No internal fit out.

	Criteria	Standard	BREEAM Credit	SKA Reference	Comments / Evidence
		• 'Cradle to Cradle' Gold or Platinum certified; • supplied with an environmental product declaration, written in accordance with ISO 14025 standards; or • awarded the EU Ecolabel.			
5.0	External Works				
5.1	Hard landscaping	All hard landscaping to be A or A+ rated in accordance with the BRE Green Guide Recycled sub-base material should be specified.	Mat02	-	Standard will be met.
5.2	Soft landscaping, green roof or green wall	All planting to be of high ecological value, drought resistant, requires low maintenance, be beneficial to bees and consider the local and Hammerson Biodiversity Action Plan. An ecologist should provide advice on the planting strategy to maximise ecological value Use of plastic planting and green walls should be avoided Any planting or biodiversity removed from site during construction must be replanted locally. New planting or biodiversity must at a minimum match what was removed. Any increased irrigation demand must be met through rainwater harvesting.	-	-	Not applicable. No proposed planting in the scheme.

	Criteria	Standard	BREEAM Credit	SKA Reference	Comments / Evidence
5.3	External signage	All external signage must meet at least one of the following: • reused; • if new, all components are manufactured with a recycled content of at least: ○ aluminium extrusion – 44% ○ aluminium sheet – 73% ○ steel section – 60% ○ steel sheet – 60% ○ stainless Steel – 75% ○ copper sheet – 60% ○ glass – 10% ○ rapidly renewable products – 100% ○ recycled composite materials – 80% ○ adhered graphics – 100% manufactured from non-pvc products ○ textile – to have the OekoTEX or Ecolabel certification or to be made with rapidly renewable products. • if new, are manufactured with cardboard or rapidly renewable products; • if new have a BES6001 'Good' rating or better; or • if new, have a Cradle-to-Cradle Gold or Platinum certificate.	-	M29	Not applicable. No proposed external signage as part of development.

	Criteria	Standard	BREEAM Credit	SKA Reference	Comments / Evidence
		- if timber or containing timber components, the timber should be FSC or PEFC certified And: - if the sign is to be lit, lamps must be LED and must be able to be switched off (either manually or via BMS).			
6.0	Waste				
6.1	Site waste management	The Contractor must produce and update a Site Waste Management Plan and provide to the Employer when requested and retain all Waste Transfer Notes. All centre waste management protocols are to be followed, and data should be provided monthly on tonnes of waste sent to incineration / reuse / recycling / landfill.	Wst01	D08 & D09	Contractor to ensure standard is met. Standard to form part of Employer's Requirements / Contract Preliminaries.
6.2	Diverting waste from landfill	The Contractor should divert a minimum of 97% of construction waste and 99% of demolition waste from landfill.	Wst01	P03 & P04	Contractor to ensure standard is met. Standard to form part of Employer's Requirements / Contract Preliminaries.
6.3	Waste generation	The Contractor should not generate more than 1.9 tonnes of construction waste per m ² of floor area of the project.	Wst01	D11-D18, D48, D60 & D61	Contractor to ensure standard is met. Standard to form part of Employer's Requirements / Contract Preliminaries.